

SEQUENCE LISTING

(1) GENERAL INFORMATION:

(i) APPLICANT:

(A) NAME: University College London
 (B) STREET: Rowland Hill Street
 (C) CITY: London
 (D) STATE: none
 (E) COUNTRY: United Kingdom
 (F) POSTAL CODE (ZIP): NW3 2PF

(ii) TITLE OF INVENTION: A novel polypeptide hormone phosphatonin

(iii) NUMBER OF SEQUENCES: 25

(iv) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: Floppy disk
 (B) COMPUTER: IBM PC compatible
 (C) OPERATING SYSTEM: PC-DOS/MS-DOS
 (D) SOFTWARE: PatentIn Release #1.0, Version #1.30 (EPO)

(2) INFORMATION FOR SEQ ID NO: 1:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1655 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: double
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(ix) FEATURE:

(A) NAME/KEY: CDS
 (B) LOCATION:1..1290

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:

GTG AAT AAA GAA TAT AGT ATC AGT AAC AAA GAG AAT ACT CAC AAT GGC	48
Val Asn Lys Glu Tyr Ser Ile Ser Asn Lys Glu Asn Thr His Asn Gly	
1 5 10 15	
CTG AGG ATG TCA ATT TAT CCT AAG TCA ACT GGG AAT AAA GGG TTT GAG	96
Leu Arg Met Ser Ile Tyr Pro Lys Ser Thr Gly Asn Lys Gly Phe Glu	
20 25 30	
GAT GGA GAT GAT GCT ATC AGC AAA CTA CAT GAC CAA GAA GAA TAT GGC	144
Asp Gly Asp Asp Ala Ile Ser Lys Leu His Asp Gln Glu Glu Tyr Gly	
35 40 45	
GCA GCT CTC ATC AGA AAT AAC ATG CAA CAT ATA ATG GGG CCA GTG ACT	192
Ala Ala Leu Ile Arg Asn Asn Met Gln His Ile Met Gly Pro Val Thr	
50 55 60	
GCG ATT AAA CTC CTG GGG GAA GAA AAC AAA GAG AAC ACA CCT AGG AAT	240
Ala Ile Lys Leu Leu Gly Glu Glu Asn Lys Glu Asn Thr Pro Arg Asn	
65 70 75 80	

2

GTT CTA AAC ATA ATC CCA GCA AGT ATG AAT TAT GCT AAA GCA CAC TCG	288
Val Leu Asn Ile Ile Pro Ala Ser Met Asn Tyr Ala Lys Ala His Ser	
85 90 95	
AAG GAT AAA AAG AAG CCT CAA AGA GAT TCC CAA GCC CAG AAA AGT CCA	336
Lys Asp Lys Lys Lys Pro Gln Arg Asp Ser Gln Ala Gln Lys Ser Pro	
100 105 110	
GTA AAA AGC AAA AGC ACC CAT CGT ATT CAA CAC AAC ATT GAC TAC CTA	384
Val Lys Ser Lys Ser Thr His Arg Ile Gln His Asn Ile Asp Tyr Leu	
115 120 125	
AAA CAT CTC TCA AAA GTC AAA AAA ATC CCC AGT GAT TTT GAA GGC AGC	432
Lys His Leu Ser Lys Val Lys Lys Ile Pro Ser Asp Phe Glu Gly Ser	
130 135 140	
GGT TAT ACA GAT CTT CAA GAG AGA GGG GAC AAT GAT ATA TCT CCT TTC	480
Gly Tyr Thr Asp Leu Gln Glu Arg Gly Asp Asn Asp Ile Ser Pro Phe	
145 150 155 160	
AGT GGG GAC GGC CAA CCT TTT AAG GAC ATT CCT GGT AAA GGA GAA GCT	528
Ser Gly Asp Gly Gln Pro Phe Lys Asp Ile Pro Gly Lys Gly Glu Ala	
165 170 175	
ACT GGT CCT GAC CTA GAA GGC AAA GAT ATT CAA ACA GGG TTT GCA GGC	576
Thr Gly Pro Asp Leu Glu Gly Lys Asp Ile Gln Thr Gly Phe Ala Gly	
180 185 190	
CCA AGT GAA GCT GAG AGT ACT CAT CTT GAC ACA AAA AAG CCA GGT TAT	624
Pro Ser Glu Ala Glu Ser Thr His Leu Asp Thr Lys Lys Pro Gly Tyr	
195 200 205	
AAT GAG ATC CCA GAG AGA GAA GAA AAT GGT GGA AAT ACC ATT GGA ACT	672
Asn Glu Ile Pro Glu Arg Glu Glu Asn Gly Gly Asn Thr Ile Gly Thr	
210 215 220	
AGG GAT GAA ACT GCG AAA GAG GCA GAT GCT GTT GAT GTC AGC CTT GTA	720
Arg Asp Glu Thr Ala Lys Glu Ala Asp Ala Val Asp Val Ser Leu Val	
225 230 235 240	
GAG GGC AGC AAC GAT ATC ATG GGT AGT ACC AAT TTT AAG GAG CTC CCT	768
Glu Gly Ser Asn Asp Ile Met Gly Ser Thr Asn Phe Lys Glu Leu Pro	
245 250 255	
GGA AGA GAA GGA AAC AGA GTG GAT GCT GGC AGC CAA AAT GCT CAC CAA	816
Gly Arg Glu Gly Asn Arg Val Asp Ala Gly Ser Gln Asn Ala His Gln	
260 265 270	
GGG AAG GTT GAG TTT CAT TAC CCT CCT GCA CCC TCA AAA GAG AAA AGA	864
Gly Lys Val Glu Phe His Tyr Pro Pro Ala Pro Ser Lys Glu Lys Arg	
275 280 285	
AAA GAA GGC AGT AGT GAT GCA GCT GAA AGT ACC AAC TAT AAT GAA ATT	912
Lys Glu Gly Ser Ser Asp Ala Ala Glu Ser Thr Asn Tyr Asn Glu Ile	
290 295 300	
CCT AAA AAT GGC AAA GGC AGT ACC AGA AAG GGT GTA GAT CAT TCT AAT	960
Pro Lys Asn Gly Lys Gly Ser Thr Arg Lys Gly Val Asp His Ser Asn	
305 310 315 320	

AGG AAC CAA GCA ACC TTA AAT GAA AAA CAA AGG TTT CCT AGT AAG GGC	1008
Arg Asn Gln Ala Thr Leu Asn Glu Lys Gln Arg Phe Pro Ser Lys Gly	
325 330 335	
AAA AGT CAG GGC CTG CCC ATT CCT TCT CGT GGT CTT GAT AAT GAA ATC	1056
Lys Ser Gln Gly Leu Pro Ile Pro Ser Arg Gly Leu Asp Asn Glu Ile	
340 345 350	
AAA AAC GAA ATG GAT TCC TTT AAT GGC CCC AGT CAT GAG AAT ATA ATA	1104
Lys Asn Glu Met Asp Ser Phe Asn Gly Pro Ser His Glu Asn Ile Ile	
355 360 365	
ACA CAT GGC AGA AAA TAT CAT TAT GTA CCC CAC AGA CAA AAT AAT TCT	1152
Thr His Gly Arg Lys Tyr His Tyr Val Pro His Arg Gln Asn Asn Ser	
370 375 380	
ACA CGG AAT AAG GGT ATG CCA CAA GGG AAA GGC TCC TGG GGT AGA CAA	1200
Thr Arg Asn Lys Gly Met Pro Gln Gly Lys Gly Ser Trp Gly Arg Gln	
385 390 395 400	
CCC CAT TCC AAC AGG AGG TTT AGT TCC CGT AGA AGG GAT GAC AGT AGT	1248
Pro His Ser Asn Arg Arg Phe Ser Ser Arg Arg Arg Asp Asp Ser Ser	
405 410 415	
GAG TCA TCT GAC AGT GGC AGT TCA AGT GAG AGC GAT GGT GAC	1290
Glu Ser Ser Asp Ser Gly Ser Ser Ser Glu Ser Asp Gly Asp	
420 425 430	
TAGTCCACCA GGAGTTCCCA GCGGGGTGAC AGTCTGAAGA CCTCGTCACC TGTGAGTTGA	1350
TGTAGAGGAG AGCCACCTGA CAGCTGACCA GGTGAAGAGA GGATAGAGTG AAGAACTGAG	1410
TGAGCCAAGA ATCCTGGTCT CCTTGGGGGA ATTTTTGCTA TCTTAATAGT CACAGTATAA	1470
AATTCTATTA AAGGCTATAA TGTTTTTAAG CAAAAAAAAA TCATTACAGA TCTATGAAAT	1530
AGGTAACATT TGAGTAGGTG TCATTTAAAA ATAGTTGGTG AATGTCACAA ATGCCTTCTA	1590
TGTTGTTTGC TCTGTAGACA TGAAAATAAA CAATATCTCT CGATGATAAA AAAAAAAAAA	1650
AAAAA	1655

(2) INFORMATION FOR SEQ ID NO: 2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 430 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:

Val Asn Lys Glu Tyr Ser Ile Ser Asn Lys Glu Asn Thr His Asn Gly
1 5 10 15
Leu Arg Met Ser Ile Tyr Pro Lys Ser Thr Gly Asn Lys Gly Phe Glu
20 25 30

Asp	Gly	Asp	Ala	Ile	Ser	Lys	Leu	His	Asp	Gln	Glu	Tyr	Gly		
	35					40					45				
Ala	Ala	Leu	Ile	Arg	Asn	Asn	Met	Gln	His	Ile	Met	Gly	Pro	Val	Thr
	50					55					60				
Ala	Ile	Lys	Leu	Leu	Gly	Glu	Glu	Asn	Lys	Glu	Asn	Thr	Pro	Arg	Asn
	65				70					75					80
Val	Leu	Asn	Ile	Ile	Pro	Ala	Ser	Met	Asn	Tyr	Ala	Lys	Ala	His	Ser
				85					90					95	
Lys	Asp	Lys	Lys	Lys	Pro	Gln	Arg	Asp	Ser	Gln	Ala	Gln	Lys	Ser	Pro
			100					105					110		
Val	Lys	Ser	Lys	Ser	Thr	His	Arg	Ile	Gln	His	Asn	Ile	Asp	Tyr	Leu
		115					120					125			
Lys	His	Leu	Ser	Lys	Val	Lys	Lys	Ile	Pro	Ser	Asp	Phe	Glu	Gly	Ser
	130					135					140				
Gly	Tyr	Thr	Asp	Leu	Gln	Glu	Arg	Gly	Asp	Asn	Asp	Ile	Ser	Pro	Phe
	145				150					155					160
Ser	Gly	Asp	Gly	Gln	Pro	Phe	Lys	Asp	Ile	Pro	Gly	Lys	Gly	Glu	Ala
				165					170					175	
Thr	Gly	Pro	Asp	Leu	Glu	Gly	Lys	Asp	Ile	Gln	Thr	Gly	Phe	Ala	Gly
			180					185					190		
Pro	Ser	Glu	Ala	Glu	Ser	Thr	His	Leu	Asp	Thr	Lys	Lys	Pro	Gly	Tyr
		195					200					205			
Asn	Glu	Ile	Pro	Glu	Arg	Glu	Glu	Asn	Gly	Gly	Asn	Thr	Ile	Gly	Thr
	210					215					220				
Arg	Asp	Glu	Thr	Ala	Lys	Glu	Ala	Asp	Ala	Val	Asp	Val	Ser	Leu	Val
	225				230					235					240
Glu	Gly	Ser	Asn	Asp	Ile	Met	Gly	Ser	Thr	Asn	Phe	Lys	Glu	Leu	Pro
				245					250					255	
Gly	Arg	Glu	Gly	Asn	Arg	Val	Asp	Ala	Gly	Ser	Gln	Asn	Ala	His	Gln
			260					265					270		
Gly	Lys	Val	Glu	Phe	His	Tyr	Pro	Pro	Ala	Pro	Ser	Lys	Glu	Lys	Arg
		275					280					285			
Lys	Glu	Gly	Ser	Ser	Asp	Ala	Ala	Glu	Ser	Thr	Asn	Tyr	Asn	Glu	Ile
	290					295					300				
Pro	Lys	Asn	Gly	Lys	Gly	Ser	Thr	Arg	Lys	Gly	Val	Asp	His	Ser	Asn
	305				310					315					320
Arg	Asn	Gln	Ala	Thr	Leu	Asn	Glu	Lys	Gln	Arg	Phe	Pro	Ser	Lys	Gly
				325					330					335	
Lys	Ser	Gln	Gly	Leu	Pro	Ile	Pro	Ser	Arg	Gly	Leu	Asp	Asn	Glu	Ile
			340					345					350		

Lys Asn Glu Met Asp Ser Phe Asn Gly Pro Ser His Glu Asn Ile Ile
 355 360 365
 Thr His Gly Arg Lys Tyr His Tyr Val Pro His Arg Gln Asn Asn Ser
 370 375 380
 Thr Arg Asn Lys Gly Met Pro Gln Gly Lys Gly Ser Trp Gly Arg Gln
 385 390 395 400
 Pro His Ser Asn Arg Arg Phe Ser Ser Arg Arg Arg Asp Asp Ser Ser
 405 410 415
 Glu Ser Ser Asp Ser Gly Ser Ser Ser Glu Ser Asp Gly Asp
 420 425 430

(2) INFORMATION FOR SEQ ID NO: 3:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 4 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 3:

Ser Gly Asp Gly
1

(2) INFORMATION FOR SEQ ID NO: 4:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 7 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4:

Ala Asp Ala Val Asp Val Ser
1 5

(2) INFORMATION FOR SEQ ID NO: 5:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 22 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 5:

```
Ser Ser Arg Arg Arg Asp Asp Ser Ser Glu Ser Ser Asp Ser Gly Ser
1           5           10           15

Ser Ser Glu Ser Asp Gly
                20
```

(2) INFORMATION FOR SEQ ID NO: 6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 6:

```
Ser Ser Arg Ser Lys Glu Asp Ser Asn Ser Thr Glu Ser Lys Ser Ser
1           5           10           15

Ser Glu Glu Asp Gly
                20
```

(2) INFORMATION FOR SEQ ID NO: 7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 14 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 7:

```
Asp Ser Ser Glu Ser Ser Asp Ser Gly Ser Ser Ser Glu Ser
1           5           10
```

(2) INFORMATION FOR SEQ ID NO: 8:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 38 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid

- (A) DESCRIPTION: /desc = "oligonucleotide"

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 8:

GACGACGACA AGGTGAATAA AGAATATAGT ATCAGTAA

38

(2) INFORMATION FOR SEQ ID NO: 9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 35 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid

(A) DESCRIPTION: /desc = "oligonucleotide"

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 9:

GGAACAAGAC CCGTCTAGTC ACCATCGCTC TCACT

35

(2) INFORMATION FOR SEQ ID NO: 10:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 15 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 10:

Asp	Asp	Ser	Ser	Glu	Ser	Ser	Asp	Ser	Gly	Ser	Ser	Ser	Glu	Ser
1				5					10				15	

(2) INFORMATION FOR SEQ ID NO: 11:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 16 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 11:

Asp	Asp	Ser	Ser	Glu	Ser	Ser	Asp	Ser	Gly	Ser	Ser	Ser	Glu	Ser	Asp
1				5					10				15		

(2) INFORMATION FOR SEQ ID NO: 12:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 22 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 12:

Ser Ser Arg Arg Arg Asp Asp Ser Ser Glu Ser Ser Asp Ser Gly Ser
1 5 10 15

Ser Ser Glu Ser Asp Gly
 20

(2) INFORMATION FOR SEQ ID NO: 13:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 14 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 13:

Asp Ser Ser Asp Ser Ser Asp Ser Ser Ser Ser Ser Asp Ser
1 5 10

(2) INFORMATION FOR SEQ ID NO: 14:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 15 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 14:

Asp Asp Ser Ser Asp Ser Ser Asp Ser Ser Asp Ser Ser Asp Ser
1 5 10 15

(2) INFORMATION FOR SEQ ID NO: 15:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 14 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 15:

Asp Ser Ser Asp Ser Ser Asp Ser Asn Ser Ser Ser Asp Ser
1 5 10

(2) INFORMATION FOR SEQ ID NO: 16:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 14 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 16:

Asp Ser Ser Glu Ser Ser Asp Ser Ser Asn Ser Ser Asp Ser
1 5 10

(2) INFORMATION FOR SEQ ID NO: 17:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 14 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 17:

Asp Ser Ser Asp Ser Ser Asp Ser Ser Asn Ser Ser Asp Ser
1 5 10

(2) INFORMATION FOR SEQ ID NO: 18:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 16 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 18:

Asp	Asp	Ser	His	Gln	Ser	Asp	Glu	Ser	His	His	Ser	Asp	Glu	Ser	Asp
1				5				10						15	

(2) INFORMATION FOR SEQ ID NO: 19:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 19:

Ser	Asp	Glu	Ser	His	His	Ser	Asp	Glu	Ser	Asp
1				5				10		

(2) INFORMATION FOR SEQ ID NO: 20:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 20:

Ser	Asp	Ser	Ser	Ser	Ser	Ser	Asp	Ser	Ser	Asp
1				5				10		

(2) INFORMATION FOR SEQ ID NO: 21:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 21:

Ser Asp Ser Ser Asp Ser Ser Asp Ser Ser Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO: 22:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 22:

Ser Asp Ser Ser Asp Ser Ser Asp Ser Ser Asn
1 5 10

(2) INFORMATION FOR SEQ ID NO: 23:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 23:

Ser Ser Arg Ser Lys Glu Asp Ser Asn Ser Thr Glu Ser Lys Ser Ser
1 5 10 15

Ser Glu Glu Asp Gly
20

(2) INFORMATION FOR SEQ ID NO: 24:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 25 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid

(A) DESCRIPTION: /desc = "oligonucleotide"

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 24:

GGTTATACAG ATCTTCAAGA GAGAG

25

(2) INFORMATION FOR SEQ ID NO: 25:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid

(A) DESCRIPTION: /desc = "oligonucleotide"

(iii) HYPOTHETICAL: YES

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 25:

GTTGGTACTT TCAGCTGCA⁷ CACT

24